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REGULATION OF FUELS AND FUEL ADDITIVES

Notice of Proposed Rule Making

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 80]

REGULATION OF FUELS AND FUEL ADDITIVES

Notice of Proposed Rule Making

On February 23, 1972, a notice of proposed rule making was published in the FEDERAL REGISTER (37 FR 3882), setting forth the proposed text of regulations promulgating Federal standards for the use of lead and phosphorus additives in gasoline. Pursuant to the above notice, several public hearings were held. In addition, numerous written comments were received from interested persons during an extended public comment period. After consideration of the hearings testimony and other comments, and after further consideration of the available information on the health effects of airborne lead and the adverse effect of leaded gasolines on emission control devices, the Administrator has determined that the originally proposed regulation should be divided into two parts. The sections which provide for the availability of lead-free gasoline to protect emission control devices are promulgated, with some modifications from the proposal, in this issue of the FEDERAL REGISTER. The sections providing for a reduction in the lead content of leaded gasolines for health protective reasons are reproposed below.

Based on the evidence available at the time of the proposed regulations' publication, the Administrator concluded that airborne lead levels exceeding 2 micrograms per cubic meter, averaged over a period of 3 months or longer, were associated with a sufficient risk of adverse physiologic effects to constitute endangerment of public health. Since airborne lead levels in many major urban areas currently range from 2 to over 5 micrograms and since motor vehicles are the predominant source of airborne lead in such areas, attainment of a 2-microgram level in many areas would require at least 60 to 65 percent reduction in lead emissions from motor vehicles. Accordingly, the Administrator proposed to regulate the lead content of "regular" and "premium" leaded gasolines by providing for the reduction of lead over a 4-year period, beginning January 1, 1974. It was the Agency's judgment that these reductions, together with the introduction of one grade of lead-free gasoline would provide for the protection of health in major urban areas within the shortest time reasonably possible.

In the preamble to the proposed regulations and in a subsequent publication (June 14, 1972; 37 FR 11786), the Administrator invited all interested parties to submit additional information on the health effects of airborne lead. Based upon additional information received as hearing testimony and written comments, reanalysis of the previously available data, and examination of recently developed information, the Agency's position on the health effects of airborne lead has been reevaluated.

Through EPA's reevaluation, the Administrator determined that it is difficult if not impossible to rely on the analysis presented in the earlier proposal to establish a precise level of airborne lead (2 μg. per m.^{3}) acceptable as the basis for a control strategy. Because earlier data lack such precision, and because new data have become available in the interim, the original health position can no long be considered sufficient.

EPA's new health position is based upon the following factors. Currently, considerable numbers of urban residents have abnormally elevated blood lead levels resulting from excessive exposure to environmental lead principally through food, water, paint, air, and dust. Emissions from motor vehicles using leaded gasoline account for over 90 percent of the lead emitted into the atmosphere. The resulting airborne lead can: (a) Be directly absorbed through the lungs as people breathe, or (b) settle out of the air to contaminate the dirt and dust which may be consumed by children. Strong evidence exists to support the view that through these routes airborne lead contributes to excessive lead exposure in urban adults and children.

Adults. Correlations between likelihood of exposure to airborne lead and high blood lead levels have been demonstrated in several selected adult groups. For example, Table I shows that urban male and female samples have significantly higher blood lead levels than their suburban counterparts. Women exposed to the higher air lead levels of the city are consistently found to have higher blood lead levels than women residing in suburban areas (see Table IIa). Although one cannot prove conclusively that airborne lead levels were solely responsible for this difference, the observation that women living in homes close to a highway have increased blood lead compared to women living greater distances from that highway further suggests that airborne lead and consequently lead in gasoline is contributing to these blood lead elevations (see Table IIb). Studies of urban women are especially significant since blood levels in newborn babies are known to be well correlated with lead levels in expectant mothers. Among urban exposed adults (see Table III) exposure by occupation (parking attendants vs. post office employees) and time of exposure (commuters vs. downtown residents) demonstrates that urban dwellers are more likely to have abnormal blood lead levels, and those most directly exposed to airborne lead typically have the highest blood lead levels.

TABLE I.—URBAN-SUBURBAN BLOOD LEAD COMPARISONS IN ADULTS

Group studied	Number studied	Percent blood leads equal to or greater than 40 ug./100 g.
Urban females [2]	423	0.7
Surburban females	556	0
Philadelphia males: [4]		
Urban	66	4.5
Surburban	23	0
Composite: [3]		
Urban	833	[4] 2.7
Surburban	162	0

[1] "Survey of Lead in the Atmosphere of Three Urban Communities," PHS Pub. No. 999-AP-12.
[2] Tepper, Lloyd: "A Survey of Air and Population Lead Levels in Selected American Communities," (7 city study), testimony presented at EPA public hearing in Los Angeles May 3, 1972, and report submitted to EPA, June 1972.
[3] Hofreuter, D. H., et al.: "The Public Health Significance of Atmospheric Lead," Arch. Env. Health 3:82-88, November 1961.
[4] Only those above 40.

TABLE II.—SUMMARY OF DATA RELATING BLOOD LEAD LEVELS IN WOMEN TO PLACE OF RESIDENCE

(a)

	Number studied	Average air lead exposure ug./m.^{3} (geometric mean)	Average blood lead ug./100 g. (geometric mean)	Percent blood leads above 29 ug./100 g.	Percent blood leads 40 and above	Percent blood leads above 50
From 7 city study: [1]						
New York urban	140	2.08	16.6	1.4	0	0
New York suburban	198	1.13	15.3	0.5	0	0
Chicago urban	147	1.76	17.6	3.4	0.7	0
Chicago suburban	208	1.18	13.9	0.5	0	0
Philadelphia urban	136	1.67	20.5	11.0	1.5	0
Philadelphia suburban	150	1.15	18.0	4.7	0	0

(b)

Population	Number studied	Average air lead exposure (ug./m.^{3})		Average blood lead ug./100 g.	Percent blood leads above 29 ug./100 g.	Percent blood leads 40 and above	Percent blood leads above 50
		Front porch	In Home				
From roadway study: [2]							
Living near roadway (12 feet away)	55	4.60	2.30	23.1	25.4	1.8	1.8
Living away from roadway:							
(a) 125 feet away	34	2.41	1.50	17.4	0	0	0
(b) 400 feet away	61	2.24	1.57	17.6	6.6	1.6	0

[1] Tepper, Lloyd, and Levin, Linda, "A Survey of Air and Population Lead Levels in Selected American Communities," Report submitted to EPA, June 1972.
[2] Daines, R. H., Smith, D. W., Feliciano, A. F., and Trout, J. R., "Air Levels of Lead Inside and Outside Homes," Ind. Med. Journal, 41:26-28, October 1972.

TABLE III.—EXTENT OF ABNORMALLY ELEVATED BLOOD LEADS AMONG URBAN ADULTS

City	Exposure category	Number studied	Percent of blood leads equal to or greater than 40 ug./100 g.
Cincinnati	Post Office employees [1]	140	2.9
	Firemen [1]	191	3.0
	Service station attendants [1]	130	12.3
	Police [1]	40	12.5
	Drivers of cars [1]	59	15.0
	Parking attendants [1]	48	44.0
	Garage mechanics [1]	152	67.0
Los Angeles area	Los Angeles Police [1]	155	0.6
	Pasadena male city employees [1]	88	3.3
	Los Angeles female aircraft employees [1]	87	3.3
	General Los Angeles clinic population [5]	45	4.4
	Los Angeles male aircraft employees [1]	291	5.2
Oakland	Female clinic patients [3]	53	1.9
	Male clinic patients [3]	36	5.5
Philadelphia	Male commuters [1]	43	2.3
	Police [1]	113	3.5
	Downtown male residents [1]	66	4.5
Camden, N.J.	Women living near freeways [4]	55	1.8
Composite urban samples	Females from New York, Philadelphia, and Chicago. [2]	423	0.7
	Males and females from 6 cities [3]	833	[6] 2.7

[1] "Survey of Lead in the Atmosphere of Three Urban Communities," PHS Pub. No. 999-AP-12.
[2] Tepper, L.: "A Survey of Air and Population Lead Levels in Selected American Communities" (7 city study), testimony presented at EPA public hearing in Los Angeles May 3, 1972, and report submitted to EPA, June 1972.
[3] Hofreuter, D. H., et al.: "The Public Health Significance of Atmospheric Lead," Arch. Env. Health 3:82-88, November 1961.
[4] Daines, R. H. et al.: "Air Levels of Lead Inside and Outside Homes," Ind. Med. Journal, 41: pp. 26-28, October 1972.
[5] Goldsmith, J., California Department of Public Health, testimony submitted to EPA July 11, 1972.
[6] Only those above 40.

Children. Though airborne lead also contributes to total lead exposure in children, a possibly more important route of exposure may be ingestion of leaded nonfood items such as leaded paint and dirt. Exposure of children to lead-based peeling paint commonly found in deteriorating housing has been traditionally recognized as a hazard for young children. However, recent studies indicate that the presence of lead contaminated dirt and dust in urban areas represents another potentially significant source of lead exposure for children. Levels of lead in dust and dirt are known to decrease with increased distance from roadways and hence are directly related to the use of lead in gasoline. Continued ingestion of only fractions of a teaspoon per day of the lead contaminated dirt and dust presently found in urban areas would easily exceed the daily permissible intake of lead for children (300 μg. per day). A report by the National Academy of Sciences concludes that "the swallowing of lead contaminated dust may well account in large part for higher mean blood lead content in urban children."

Though none of the above findings viewed individually and in the context of possible experimental error can be taken as conclusive evidence that airborne lead by itself is a current public health problem, considered together, they do suggest that airborne lead is contributing to excessive total lead exposures among the general urban population. In light of this evidence, the Administrator has concluded that it would be prudent to reduce preventable lead exposures from automobile emitted airborne lead to the fullest extent possible.

In setting forth this conclusion, the Administrator recognizes that uncertainties exist concerning the relative significance of various sources of lead exposure and the most cost-effective approach to prevent excessive exposure. Currently, the contribution of any one source such as lead in gasoline to the general problem of excessive lead exposure has not been quantified and requires additional investigation. Due in part to this situation, the most cost-effective approach to the aggregate prevention of excessive lead exposure has not been defined. Several questions remain unanswered concerning the emphasis which should be placed on preventative measures such as the removal of lead-based paint from existing structures, the complete versus partial or gradual elimination of lead from gasoline, and stricter controls on the lead content of food and water. The lead in gasoline issue presents particular difficulties regarding the cost-effectiveness of reducing lead contents below the level of 0.5 gram per gallon.

The proposal set forth in this notice, is limited to reducing the lead content in leaded gasoline to 1.25 grams per gallon. It is the Administrator's intention that lead in gasoline should be reduced as much as possible. In determining if further reductions will be required the Administrator will consider: (a) The degree of lead reduction that will occur as a result of the use of unleaded gasoline. If it appears that the choice of emission control systems eventually will require the universal use of unleaded gasoline, this would influence the type of reduction schedule considered by the Administrator for the period following January 1, 1978. On the other hand, if lead sensitive emission control systems are not employed universally, the Administrator will take appropriate actions to reduce lead content in leaded grades as much as possible; (b) evidence on the feasibility of reducing lead from other environmental sources.

The lead reduction specified in this proposal will augment the final lead additive regulations which provide for the general availability of lead-free gasoline. EPA recognizes that if lead-free gasoline is required in all 1975 and later model vehicles, lead-free gasolines would eventually replace leaded gasolines. However, the removal of lead from gasoline according to this approach would be dependent upon the fuel requirements of future emission control devices and consequently would not assure the reduction or elimination of motor vehicle lead emissions. Even if unleaded fuel ultimately displaces all leaded gasolines, the action to reduce lead content in leaded gasoline to 1.25 grams per gallon significantly accelerates the total lead reduction during the next 5 years. Though the benefits associated with the accelerated lead reductions have not been quantified, the Administrator has concluded that this approach is not unreasonably costly and will prudently prevent unnecessary exposure to airborne lead.

Because of the need for public comment on the foregoing issues and since the restated health position is based upon a health effects document which has not been reviewed and commented upon by the public or the scientific community, the Administrator has determined that the previously proposed lead reductions for leaded grades of gasoline should be reproposed for public comment and discussion in a somewhat revised form. The scientific community particularly is encouraged to comprehensively study and comment upon the relative significance of various lead exposure routes in the environment, the cost effectiveness of various approaches to controlling these exposure routes, and the benefits gained by reducing the lead content of leaded gasolines as well as providing for the general availability of lead-free fuel. Such efforts could complement additional investigation of this subject by EPA and other Federal agencies. A detailed examination of the health effects information which forms the basis for EPA's position is included in a paper entitled "EPA's Position on the Health Effects of Airborne Lead." Copies of this paper are available from the Publications Section, Environmental Protection Agency, 401 M Street SW., Room W238, Washington, DC 20460.

The Administrator is required to assure that substitute fuel formulations or additives will not produce emissions that would endanger the public health or welfare to the same or greater degree than lead emissions. The lead reductions required by these regulations and the lead reductions resulting from the general availability of lead-free gasoline will not cause an increase in other harmful emissions. The basis for this finding is set forth in a paper entitled "Effects of Reduced Use of Lead in Gasoline on Vehicle Emissions and Photochemical Reactivity." Copies of this paper are available from the Publications Section, Environmental Protection Agency, 401 M Street SW., Room 238W, Washington, DC 20460.

The Administrator has considered whether it would be more economically and technologically feasible to provide for the protection of public health by

means of a new vehicle emission standard for lead particles than by means of the proposed reduction of gasoline lead content. It is considered unlikely that new motor vehicles could be equipped with lead emission control devices prior to the 1975 model year. Beginning in that model year, vehicles will be equipped with catalytic emission control systems which are rendered ineffective by lead emissions, and all evidence available to the Administrator indicates that lead trap devices adequate to protect the catalysts will not be available by 1975. Furthermore, the Administrator does not have authority to prescribe a lead emission standard applicable to other-than-new vehicles so that even a zero lead emission standard could be applied to new motor vehicles only. Older vehicles would continue to use leaded gasolines. Accordingly, the Administrator has determined that providing for the protection of public health by means of a new motor vehicle emission standard for lead is not feasible.

The February proposal provided for control of lead additives in leaded grades of gasoline by specifying a maximum lead content for each gallon of leaded gasoline sold during a given year. The regulations provided for a maximum of 2 grams per gallon effective January 1, 1974; 1.7 grams per gallon effective January 1, 1975; 1.5 grams per gallon effective January 1, 1976; and 1.25 grams per gallon effective January 1, 1977.

The regulations proposed below provide for the lead reductions set forth in the February proposal with certain modifications. Due to the lead time needed by the petroleum industry to prepare for the proposed lead reductions, the regulations proposed below defer the reduction schedule by 1 year. Furthermore, the regulations provide for an average lead level per gallon of leaded gasoline produced by an individual refinery during any quarter rather than a maximum lead content per gallon of gasoline sold. Accordingly, the regulations proposed below provide for a quarterly average lead content in the leaded grades of gasoline produced by any refinery of 2 grams per gallon effective January 1, 1975; 1.7 grams per gallon effective January 1, 1976; 1.5 grams per gallon effective January 1, 1977; and 1.25 grams per gallon effective January 1, 1978.

The proposal's specified average lead levels in the leaded grades of gasoline rather than the maximum lead level per gallon sold responds to comments received on the February proposal. Gasoline refiners emphasized that establishing a maximum lead level for each grade or batch of gasoline restricts flexibility in production of gasoline. The optimum quantity of lead to be added to a particular blend of gasoline varies with the octane quality of the blending stocks and their susceptibility to octane boost from lead additives. These factors result in different lead levels to maximize the utility of lead additives in refining gasoline.

In addition, the ability to add amounts of lead exceeding the standard to particular batches is useful in correcting blending errors or to cover cases where refining units are shutdown for repairs. The alternative would be to store as insurance against shutdowns and to reblend stocks not meeting the octane blending stocks specifications unless additional lead is added. The elimination of flexibility in the use of lead would increase costs and also increase the use of crude oil to some extent.

For these reasons, the refiners urged that each refinery be permitted to allocate lead over gasoline production to make optimal use of lead additives so long as the average lead content of gasoline produced by each refinery did not exceed the maximum levels necessary to achieve the reduction in lead additive usage and lead emissions determined by EPA to be necessary each year.

Several types of averaging have been proposed. Under one system proposed, each refinery (not company) would be permitted to allocate lead over all leaded grades produced so long as the average lead content per gallon of leaded gasoline produced did not exceed EPA's standard for the particular year over a given period. Various companies have proposed quarterly, semiannual, or annual averaging and reporting periods.

The second system recommended would permit a refinery to average its lead usage over all grades of gasoline produced, including the unleaded grade. The unleaded grade will be produced without the use of lead additives. This approach would require that the lead reduction schedule be recomputed to take account of production of unleaded gasoline in establishing the permissible average lead level. The effect would be to reduce the average lead levels allowable for all gasoline produced.

The Administrator finds that optimum refining flexibility consistent with attainment of the necessary reductions in lead usage can be best attained by providing for averaging of lead usage over each refinery's quarterly production of leaded gasoline. Analysis of industry comments and a study commissioned by EPA suggests that leaded pool averaging affords maximum flexibility to the refining industry as a whole, provides for the most efficient use of natural resources, accomplishes the necessary reduction in lead usage and lead emissions throughout the country, and will not cause a variation in the lead content of gasoline sold in different geographic regions. Accordingly, a system of leaded pool averaging is proposed for comment.

Monitoring of lead usage by refineries in production of leaded gasoline requires that quarterly reports be submitted by each refinery showing lead inventories on the first and last days of the reporting period, total gallons of leaded gasoline produced during the period, and the average lead content in each gallon of leaded gasoline produced during the period. Information on quarterly lead shipments to each refinery by lead additive manufacturers is also required for verification of lead usage reported by refineries. Regulations requiring these reports and providing for confidentiality of information reported as appropriate are proposed below.

This issue of the FEDERAL REGISTER sets forth regulations providing for the liability of major brand refiners for sales at their retail outlets of unleaded gasoline containing lead in violation of the standard presented in those regulations. In order to clearly indicate that there is a positive duty on the major brand refiner to prevent any violation of the unleaded gasoline standard at his retail outlets, the Agency is proposing below a regulation specifically defining this duty.

Interested persons may participate in the proposed rule making by submitting written comments in triplicate. Comments on the proposed regulations' lead reduction schedule and the health rationale for this action should be submitted to the Assistant Administrator for Air and Water Programs, Environmental Protection Agency, Waterside Mall, 401 M Street SW., Washington, DC 20460. All relevant comments postmarked not later than 60 days after publication of this notice will be considered. Comments received will be available for public inspection during normal working hours (8 a.m. to 4:30 p.m.) at the Office of Public Affairs, Waterside Mall, 401 M Street SW., Room 329C, Washington, DC 20460.

This notice of proposed rule making is issued under the authority of sections 211 and 301 of the Clean Air Act as amended (42 U.S.C. 1857f–6c, 1857g(a)).

Dated: January 4, 1973.

WILLIAM D. RUCKELSHAUS,
Administrator,
Environmental Protection Agency.

It is proposed to amend Part 80 of Chapter I, Title 40 of the Code of Federal Regulations as follows:

1. In § 80.1, the second sentence is revised to read as follows:

§ 80.1 Scope.

* * * These regulations are based upon a determination by the Administrator that the emission product of a fuel or additive will endanger the public health, or will impair to a significant degree the performance of a motor vehicle emission control device in general use or which the Administrator finds has been developed to a point where in a reasonable time it would be in general use were such regulations promulgated; and certain other findings specified by the Act.

2. In § 80.2, a new paragraph (m) is added as follows:

§ 80.2 Definitions.

* * * * *

(m) "Lead additive manufacturer" means any person who produces a lead additive or sells a lead additive under his own name.

3. A new § 80.20 is added as follows:

§ 80.20 Controls applicable to gasoline refiners.

(a) (1) In the manufacture of leaded gasoline at any refinery, no gasoline refiner shall exceed the average lead content per gallon specified below for each 3-month period (January through March, April through June, July through September, October through December):

(i) 2.0 grams of lead per gallon, after January 1, 1975;

(ii) 1.7 grams of lead per gallon, after January 1, 1976;

(iii) 1.5 grams of lead per gallon, after January 1, 1977;

(iv) 1.25 grams of lead per gallon, after January 1, 1978.

(2) For each 3-month period (January through March, April through June, July through September, October through December) the average lead content per gallon shall be computed by dividing total grams of lead used at a refinery in the manufacture of gasoline by total gallons of leaded gasoline manufactured at such refinery.

(3) For each 3-month period (January through March, April through June, July through September, October through December) commencing with the period January 1, 1975, through March 31, 1975, each refiner shall submit to the Administrator a report showing for each refinery: (i) The total grams of lead in lead additive inventory on the first day of the period, (ii) the total grams of lead received during the period, (iii) the total grams of lead in lead additive inventory on the last day of the period, (iv) the total gallons of leaded gasoline produced by such refinery during the period, and (v) the average lead content in the total gallonage of leaded gasoline produced during the period. Reports shall be submitted within 15 days after the close of the reporting period, on forms supplied by the Administrator upon request.

(b) The provisions of paragraph (a) (1) (i) of this section shall not apply to any refiner which does not have more than 30,000 barrels per day crude oil or bona fide feed stock capacity from owned or leased facilities or from facilities made available to such refiner under an arrangement such as, but not limited to, an exchange agreement (except one on a refined product for refined product basis), or a throughput or other form of processing agreement, with the same effects as though such facilities had been leased.

(c) After July 1, 1974, no refiner shall cause or permit any violation of § 80.22 (a) by any retailer at whose retail outlet or on whose gasoline pumps or pumpstands the corporate, trade, or brand name of the refiner or any of the refiner's marketing subsidiaries appears or is displayed.

4. A new § 80.25 is added as follows:

§ 80.25 Controls applicable to lead additive manufacturers.

For each 3-month period (January through March, April through June, July through September, October through December) commencing with the period January 1, 1975, through March 31, 1975, each lead additive manufacturer shall submit to the Administrator a report showing the total grams of lead shipped to each refinery by such lead additive manufacturer during the period. Reports shall be submitted within 15 days after the close of the reporting period, on forms supplied by the Administrator upon request.

5. A new § 80.26 is added as follows:

§ 80.26 Confidentiality of information.

(a) All information reported to the Administrator or his representatives pursuant to this part, which information contains or relates to a trade secret or other matter referred to in 18 U.S.C. 1905, shall be considered confidential for the purpose of such 18 U.S.C. 1905, except that such information may be disclosed to other officers or employees of the United States concerned with carrying out this Act or when relevant in any proceeding under the Act. Nothing in this part shall authorize the withholding of information by the Administrator or any officer or employee under his control from the duly authorized committees of the Congress. Any such confidential information forwarded to a committee of the Congress will be identified as confidential information.

(b) Manufacturers submitting information to the Administrator pursuant to this part shall identify that information which they believe contains or relates to a trade secret or other matter referred to in 18 U.S.C. 1905. Where public disclosure of any information so identified is contemplated by the Administrator, the manufacturer will be notified and allowed a reasonable time in which to satisfy the burden of showing the applicability of 18 U.S.C. 1905 to such information. If the Administrator determines that the manufacturer has sustained this burden of proof, the information in question will not be disclosed. If the Administrator determines that the manufacturer has not sustained this burden of proof, the Administrator may disclose such information.

[FR Doc.73-393 Filed 1-9-73;8:45 am]

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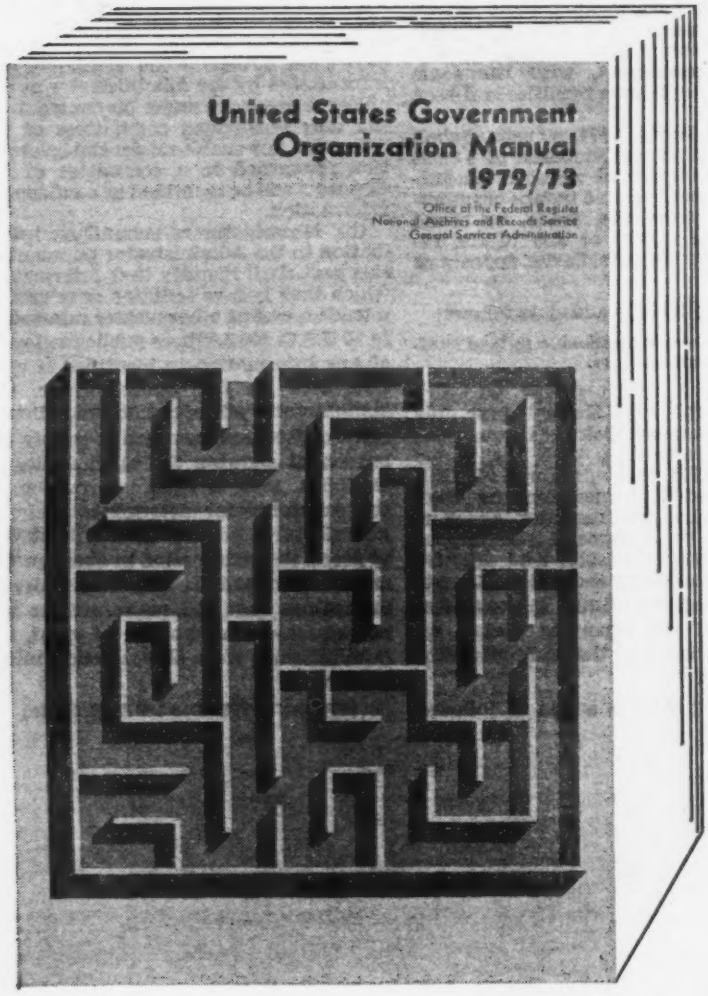

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